



AF/2830

TRANSMITTAL OF APPEAL BRIEF

Docket No.
06011/36294A

In re Application of: David D. McAfee

Application No.
09/691,520Filing Date
October 18, 2000Examiner
Joseph WaksGroup Art Unit
2834

Invention: Enhanced Cooling Apparatus and Method Rotating Machinery

TO THE COMMISSIONER OF PATENTS:Transmitted herewith in triplicate is the Appeal Brief in this application, with respect to the Notice of Appeal filed: February 10, 2003The fee for filing this Appeal Brief is 320.00☒ Large Entity☐ Small Entity☒ A check in the amount of 320.00 is enclosed.☐ Charge the amount of the fee to Deposit Account No. _____
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Dated: April 14, 2003

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**FEE TRANSMITTAL
for FY 2003**

Patent fees are subject to annual revision.

Applicant claims small entity status. See 37 CFR 1.27

TOTAL AMOUNT OF PAYMENT (\$) 320.00

Complete if Known

Application Number 09/691,520
 Filing Date October 18, 2000
 First Named Inventor McAfee
 Examiner Name Joseph Waks
 Group Art Unit 2834
 Attorney Docket No. 06011/36294A

METHOD OF PAYMENT (check all that apply)

☒ Check ☐ Credit Card ☐ Money Order ☐ Other ☐ None
☐ Deposit Account

Deposit Account Number 13-2855

Deposit Account Name MARSHALL, GERSTEIN & BORUN

The Commissioner is hereby authorized to: (check all that apply)

☐ Charge fee(s) indicated below ☒ Credit any overpayments
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FEE CALCULATION**1. BASIC FILING FEE**

Large Entity Fee Code	Large Entity Fee (\$)	Small Entity Fee Code	Small Entity Fee (\$)	Fee Description	Fee Paid
1001	750	2001	375	Utility filing fee	
1002	330	2002	165	Design filing fee	
1003	520	2003	260	Plant filing fee	
1004	750	2004	375	Reissue filing fee	
1005	160	2005	80	Provisional filing fee	
SUBTOTAL (1) (\$)					0.00

2. EXTRA CLAIM FEES FOR UTILITY AND REISSUE

Total Claims	Extra Claims	Fee from below	Fee Paid
Independent Claims	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Multiple Dependent	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Large Entity Small Entity

Fee Code	Fee (\$)	Fee Code	Fee (\$)	Fee Description
1202	18	2202	9	Claims in excess of 20
1201	84	2201	42	Independent claims in excess of 3
1203	280	2203	140	Multiple dependent claim, if not paid
1204	84	2204	42	** Reissue independent claims over original patent
1205	18	2205	9	** Reissue claims in excess of 20 and over original patent
SUBTOTAL (2) (\$)				

0.00

**or number previously paid, if greater; For Reissues, see above

FEE CALCULATION (continued)**3. ADDITIONAL FEES**

Large Entity Fee Code	Large Entity Fee (\$)	Small Entity Fee Code	Small Entity Fee (\$)	Fee Description	Fee Paid
1051	130	2051	65	Surcharge - late filing fee or oath	
1052	50	2052	25	Surcharge - late provisional filing fee or cover sheet	
1053	130	1053	130	Non-English specification	
1812	2,520	1812	2,520	For filing a request for ex parte reexamination	
1804	920*	1804	920*	Requesting publication of SIR prior to Examiner action	
1805	1,840*	1805	1,840*	Requesting publication of SIR after Examiner action	
1251	110	2251	55	Extension for reply within first month	
1252	410	2252	205	Extension for reply within second month	
1253	930	2253	465	Extension for reply within third month	
1254	1,450	2254	725	Extension for reply within fourth month	
1255	1,970	2255	985	Extension for reply within fifth month	
1401	320	2401	160	Notice of Appeal	
1402	320	2402	160	Filing a brief in support of an appeal	
1403	280	2403	140	Request for oral hearing	320.00
1451	1,510	1451	1,510	Petition to institute a public use proceeding	
1452	110	2452	55	Petition to revive - unavoidable	
1453	1,300	2453	650	Petition to revive - unintentional	
1501	1,300	2501	650	Utility issue fee (or reissue)	
1502	470	2502	235	Design issue fee	
1503	630	2503	315	Plant issue fee	
1460	130	1460	130	Petitions to the Commissioner	
1807	50	1807	50	Processing fee under 37 CFR 1.17(q)	
1806	180	1806	180	Submission of Information Disclosure Stmt	
8021	40	8021	40	Recording each patent assignment per property (times number of properties)	
1809	750	2809	375	Filing a submission after final rejection (37 CFR 1.129(a))	
1810	750	2810	375	For each additional invention to be examined (37 CFR 1.129(b))	
1801	750	2801	375	Request for Continued Examination (RCE)	
1802	900	1802	900	Request for continued examination of a design application	

Other fee (specify)

*Reduced by Basic Filing Fee Paid

SUBTOTAL (3) (\$) 320.00

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Date April 14, 2003

I hereby certify that this correspondence is being deposited with the U.S. Postal Service with sufficient postage as First Class Mail, in an envelope addressed to: Attention: Board of Patent Appeals and Interferences, Commissioner for Patents, Washington, DC 20231, on the date shown below.

Dated: April 14, 2003

Signature: Bryan J. Lempia
(Bryan J. Lempia)



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Signature: *Bryan J. Kempia*
(Bryan J. Kempia)

No.: 06011/36294A
(PATENT)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:
David D. McAfee

Application No.: 09/691,520

Group Art Unit: 2834

Filed: October 18, 2000

Examiner: Joseph Waks

For: Enhanced Cooling Apparatus and Method
Rotating Machinery



APPELLANT'S BRIEF

Attention: Board of Patent Appeals and Interferences
Commissioner for Patents
Washington, DC 20231

Dear Sir:

This brief is in furtherance of the Notice of Appeal, filed in this case on February 10, 2003, and *received* by the United States Patent & Trademark Office on February 13, 2003. Thus, this Brief on Appeal is timely filed on this day, Monday, April 14, 2003, which is two months from the date of the appeal.

The fees required under §1.17(f) and any required petition for extension of time for filing this brief and fees therefore, are dealt with in the accompanying TRANSMITTAL OF APPEAL BRIEF.

This brief is transmitted in triplicate.

This brief contains items under the following headings as required by 37 C.F.R. §1.192 and M.P.E.P. §1206:

- | | |
|------|------------------------|
| I. | Real Party In Interest |
| II. | Status of Claims |
| III. | Status of Amendments |
| IV. | Summary of Invention |

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V. Issues
VI. Grouping of Claims
VII. Arguments
VIII. Claims Involved in the Appeal
Appendix A Claims

I. REAL PARTY IN INTEREST

The present application has been assigned to Franklin Electric Co. of Indiana. Evidence of the assignment was recorded on October 18, 2000, at Reel 011398, Frame 0640.

II. STATUS OF CLAIMS

Claims 1-20 have been finally rejected under 35 U.S.C. §103(a) as obvious over Baumann et al., U.S. Patent No. 3,749,953 in view of Lukens, U.S. Patent No. 3,643,119. The final office action is dated October 8, 2002.

III. STATUS OF AMENDMENTS

A preliminary amendment was filed on February 28, 2001. The preliminary amendment has been entered and considered.

An amendment was filed on May 21, 2002 in response to a first official action dated February 22, 2002. That amendment was entered and considered, and resulted in the final action noted above.

No official response has been submitted in reply to the final action. However, a telephone interview took place on January 7, 2003 between the undersigned and the examiner, Mr. Joseph Waks. No resolution as to the status of any claim was reached during that interview, and no amendments were submitted therewith.¹ Therefore, all amendments have been entered and considered and no amendments remain outstanding or unentered.

¹ The examiner kindly mailed an Interview Summary form dated January 8, 2003, which summarized the substance of the interview.

IV. SUMMARY OF INVENTION

The present application discloses a rotary machine having an outer case or housing with an exterior surface exposed to ambient air. The case also has a drive end, an opposite end, and an interior working chamber. A rotary shaft is supported for rotation within the working chamber between the drive end and the opposite end. At least one machine component is supported on the rotary shaft for rotation in the working chamber. At least one air inlet and at least one air outlet are formed in the case. A first fan is supported for rotation on the rotary shaft and is positioned within the working chamber. The first fan is arranged to create an internal air flow through the working chamber from the at least one air inlet over the at least machine component to the at least one air outlet. A cowl is received over the opposite end of the case and defines a plenum between an interior surface of the cowl and the opposite end of the case. The cowl defines an annular exhaust opening around a perimeter of the cowl. A second fan is positioned within the plenum and is mounted for rotation on a portion of the rotary shaft. The second fan is arranged both for assisting the first fan in creating the internal air flow through the working chamber, and for creating an external air flow through the exhaust opening and over the exterior surface of the case.

A method of cooling a rotary machine is also disclosed wherein the rotary machine has a housing or case with an exterior surface exposed to ambient air, a rotary shaft supported within an interior working chamber of the case, and at least one machine component supported for rotation on the rotary shaft within the working chamber. The method includes providing at least one air inlet and at least one air outlet in fluid communication with the working chamber. The method also includes mounting a first fan for rotation on the rotary shaft within the working chamber. The method further includes mounting a second fan for rotation on the rotary shaft both within a plenum on one end of the machine and exterior to the case. The method further includes arranging the first fan to create an internal air flow through the working chamber of the case from the at least one air inlet and over the at least one machine component to the at least one air outlet. The method also includes arranging the second fan both to create an external air flow from the plenum back over the exterior surface of the case and to assist the first fan in creating the internal air flow through the working chamber.

In one example, the first fan is arranged for creating the internal air flow from the drive end toward the opposite end of the case, and the second fan is arranged to move the air exiting the at least one air outlet toward the exhaust opening of the plenum. In another example, the first fan is arranged for moving air from the opposite end toward the drive end of the case.

V. ISSUES

A. Whether the combination of Baumann and Lukens teaches or suggests all of the limitations of the rejected claims?

B. Whether the necessary suggestion or motivation to combine the teachings of Baumann and Lukens exists and can be found in the prior art?

C. Whether the rejection of claims 1-20 should be withdrawn?

VI. GROUPING OF CLAIMS

For purposes of this appeal brief only, and without conceding the teachings of any prior art reference, the claims have been grouped as indicated below:

Group Claim(s)

- A. Claims 1-19 will stand or fall together.
- B. Claim 20 will stand or fall alone.

In Section VIII below, Applicant has included arguments supporting the separate patentability of each claim group as required by M.P.E.P. §1206.

VII. ARGUMENTS

A procedural tool of examination has been established for allocating which party has the burden of proffering evidence at each stage of the process. A proper *prima facie* case of obviousness must first be established by the Patent Office and, if not established, without more, an applicant is entitled to grant of a patent.² A *prima facie* case of

² *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992).

obviousness requires: a) that a combination of two prior art references teaches all of the rejected claim limitations; b) that there would have been a reasonable expectation of success in making the combination as proposed by the examiner; and, c) that the suggestion or motivation to combine the reference teachings, as proposed in the rejection, must be found only in the prior art.³ If any one of these requirements is not met, *prima facie* obviousness has not been established. The applicant believes that *prima facie* obviousness has not been established in this application.

Particularly, the cited combination of Lukens and Baumann fails to teach all of the claim limitations as set forth below. Further, there would have been no motivation or suggestion at the time of the invention to combine the reference teachings as proposed in the final action. Lastly, the purported motivation or suggestion set forth in the final action is improper as not being based on the prior art teachings.

A. Prior Art Combination Fails to Disclose All Limitations

1. Claim 1

Claim 1 in its entirety is attached in Appendix A. Claim 1 recites a first fan within the working chamber of the housing or case, wherein the *first fan is arranged to create an internal air flow* through the working chamber. Claim 1 further recites a cowl received over the opposite end of the case wherein the cowl defines "a plenum between an interior surface of the cowl and the opposite end of the case, the cowl defining *an annular exhaust opening around a perimeter* of the cowl." Claim 1 further recites a second fan that is "positioned within the plenum and ... arranged both for assisting the first fan in creating the internal air flow through the working chamber and for creating an external air flow through the exhaust opening and over the exterior surface of the case (emphasis added)." The combination of Lukens and Baumann fails to teach or suggest the particular fan arrangement and function as claimed.

Specifically, the primary Baumann reference discloses an exterior case in the form of end shields 18 and 18', which define a space therein. The space is characterized, at

³ *In re Vaack*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

least partly, as end turn cavities 19 and 19'. Baumann also discloses three separate fan devices. Small fan blades 22 are provided on one end of the rotor 13 and move air within the cavity 19 in the direction of the arrows, as shown in Fig. 1, away from an end of the Baumann device. This is described at col. 3, line 59 - col. 4, line 11. Baumann also describes a fan enclosure 40 having a cylindrical wall 44 attached over one of the end shield 18. The enclosure 40 forms a fan space 41 therein. A fan 46 with fan blades 48 is housed within the fan space 41 of the enclosure 40. This is described at col. 4, lines 12-35.

As can be seen in Fig. 1, air is moved into the enclosure through inlets 27 by the fan 46. Air is then moved from the enclosure 40 into the end turn cavity 19. This air combines with the air moved by the fan blades 22. The air moved by the fans 22 and 46 passes over a frame 20 of the stator, which is interior to the shields 18 and 18', and then exits the cavity 19 through an exhaust opening 28 positioned between the end shields. As can be seen in Fig. 1 in Baumann, this exiting air is directed away from and generally normal or perpendicular to the housing or shields 18 and 18'. Baumann contemplates only cooling of the end turn parts and the machine components using the disclosed fan arrangement.

The Baumann fan enclosure 40 neither defines a perimeter exhaust opening, nor any air exiting the enclosure 40 via the enclosure perimeter. Further, no air is directed from any part of the enclosure *over* an exterior surface of any part of the housing, i.e., the shields 18 and 18'. Air passing from the fan enclosure 40 is directed only into the working chamber or cavity 19 and is only then redirected radially out through the exhaust opening 28. The exhaust opening is part of the machine housing, not part of the enclosure.

Baumann also discloses a third fan, with fan blades 22a, disposed at the opposite end of the rotor 13. The third fan is positioned within the end turn cavity 19'. Air is drawn through an inlet opening or orifices 27 into the cavity 19' and is directed over the frame 20 of the stator 12. The air moved by the fan 22a then exits via the exhaust openings 28 between the end shields 18 and 18'. Again, the exiting air is not moved *over* the housing or shields 18 and 18'.

To illustrate, the fan 22a moves air in a direction opposite to the air moved by the fans 22 and 46, both with the machine, and at the exhaust openings 28. Therefore, the air

flow exiting the machine at one end of the exhaust openings 28 (from the fan 22a) will effectively collide with the air exiting the other end of the exhaust openings 28 (from the fans 22 and 46), as can be seen in Fig. 1. Because these two air flow patterns are moving in different directions and collide upon exiting the openings 28 of the machine, the exhaust air is forced away from the exterior surfaces of the housing or shields.

The official action has also equated the stator frame 20 in Baumann to the claimed exterior housing surface. This is incorrect because the stator frame 20 is interior to the machine, and particularly, is interior to the shields 18 and 18'. The stator frame 20 is not part of the machine housing.

In comparing Baumann to the claimed device, it is clear that Baumann does not disclose a cowl that defines an annular exhaust opening around a perimeter of the cowl. Baumann admittedly discloses that the fan 46 of the enclosure 40 assists the fan 22 in creating *internal* air flow through a portion of a working chamber, i.e., the cavity 19. However, Baumann does not disclose that this same fan 46, while assisting the fan 22, can also create air flow *over* an exterior surface of the housing of the machine. Baumann further does not disclose air exiting an exhaust opening *of the enclosure 40*, which then would pass over the exterior surface of the housing. Baumann fails to disclose or suggest at least these multiple limitations of claim 1.

Turning now to Lukens, this reference discloses a first fan 10 with fan blades 14 which move air through interior working chambers defined within an outer housing or wrapper 17. This is described at col. 2, lines 36-44, and shown in Fig. 1. Lukens also discloses a second fan 27 which provides suction to withdraw air from the interior working chambers of the device. This is described at col. 2, line 74 - col. 3, line 6, and is shown in Fig. 1. The two fans 10 and 27 assist one another in moving air in the same direction through the working chambers of the wrapper or housing 17. However, neither fan in Lukens is disclosed as being positioned within a fan cowl, much less a cowl that is carried on an end of the wrapper or housing 17. Instead, both fans 10 and 27 are housed within the working chamber of the wrapper 17. The fan 10 is positioned within one end of the housing or wrapper 17, and the fan 27 is positioned interior to an end plate 19 of the wrapper 17.

Further, air that exits the wrapper 17 in Lukens exits in only three ways. First, some air is reversed in direction and exits longitudinally via openings 37 in the hub of fan 10, as described at col. 3, lines 32-37 and shown in Fig. 1. Some air exits the wrapper in a radial direction, i.e., perpendicular to the exterior surface of the wrapper 17, via openings 38 adjacent the fan 27. This is described at col. 3, lines 37-41 and lines 45-49 and is shown in Fig. 1. Still some air exits the wrapper 17, also in a radial direction, via apertures 41, as described at col. 3, lines 41-45. No air exiting any of these openings 37, 38, or 41 is directed *over* any exterior surface of the housing.

Again, the final action has also equated the stator frame or plate 7 in Lukens to the claimed case exterior surface. This is incorrect because the stator frame 7 is positioned interior to the wrapper 17 within the working chamber.

In comparison to the device as claimed, Lukens also does not disclose or suggest a cowl that defines a perimeter annular exhaust opening. Lukens further does not disclose or suggest a fan positioned within such a cowl. Admittedly, Lukens does disclose two fans 10 and 27 that assist one another in moving air through the working chambers of the wrapper 17. However, Lukens does not disclose or suggest that one of these two fans, whether or not positioned in a cowl and while assisting the other fan, can create an external air flow *over* an exterior surface of the wrapper 17. Lukens fails to disclose or suggest the very limitations of claim 1 that are also missing in Baumann.

Neither reference teaches the above-discussed limitations of claim 1 and, therefore, combining the reference teachings fails to disclose or suggest these same limitations. The combination of Lukens and Baumann fails to disclose or suggest all of the limitations of independent claim 1, as well as dependent claims 2-19. The final action has failed to raise a *prima facie* case of obviousness as to claims 1-19 for at least this reason.

2. Claim 20

Claim 20 is also attached in its entirety in Appendix A. Claim 20 is a method claim, but recites limitations which are effectively the same as those described above with respect to claim 1. For example, claim 20 specifically recites mounting a first fan within the

working chamber and a second fan *within a plenum that is exterior to the case* (and thus exterior to the working chamber). Claim 20 further recites arranging the *first fan to create an internal air flow through the working chamber*, and arranging the *second fan both to create an external air flow from the plenum back over the exterior surface of the case and to assist the first fan in creating the internal air flow through the working chamber*.

As with claim 1, the combination of Lukens and Baumann fails to disclose the specific recited fan arrangement and function. Neither Lukens nor Baumann discloses or suggests arranging a second fan within a plenum that is exterior to one end of a housing or wrapper such that this same second fan performs both of the claimed functions, i.e., to create both an external air flow over the exterior surface of the case and to assist the first fan in creating internal air flow through a working chamber of the device. Since neither reference discloses the above limitations, the combination of Lukens and Baumann also does not disclose or suggest these limitations.

The combination of Lukens and Baumann fails to disclose or suggest all of the limitations of independent claim 20. The final action has failed to raise a *prima facie* case of obviousness as to claim 20 for at least this reason.⁴

B. No Motivation or Suggestion to Combine Reference Teachings

1. No Proper Motivation Exists

The final action purports to modify the Baumann machine according to the teachings of Lukens and, specifically, by incorporating the fan 27 of Lukens into the Baumann machine. First, the Lukens fan 27 is arranged to *draw* air through a device toward the fan 27 and then to move the air to exit the device near the fan. Modifying the Baumann device with the fan 27, without regard as to which end of the machine is modified, would

⁴ Though not cited in the final action at issue, the examiner discussed Onjanow, U.S. Patent No. 3,610,975 (Onjanow) during the telephone interview of January 7, 2003. The examiner stated that Onjanow may disclose external air flow over a machine case. However, neither of the external fans 34 or 36 disclosed in Onjanow can in any way communicate with or assist in cooling any portion of the interior of the machine. The applicant has not addressed Onjanow herein because no rejection based on this reference stands. However, it is apparent that no combination of Onjanow with either or both of Lukens or Baumann would render claims 1-20 as obvious.

render the fan arrangement of Baumann unsatisfactory as a means of efficiently cooling the Baumann machine. Such a modification is improper.⁵

To illustrate, substituting the Lukens fan 27 for the fan 46 in the Baumann device would reverse the flow of air in the space 41 of the cowl or enclosure 40 of Baumann. The fan 22 would be drawing air from the space 41 into the cavity 19 while at the same time the fan 27 would be trying to draw air from the cavity 19 against the air flow of the fan 22. The fans 27 and 22 would work against one another if Baumann were so modified. There would be little or no ambient air intake at the right hand end of the Baumann machine, which would actually reduce the cooling efficiency of the machine. By replacing the fan 46 with the Lukens fan 27, the function of the fan 46, which is to cool the end turn components of the shaft and to substantially assist the necessarily smaller fan 22 in moving air through the cavity 19, would be destroyed. One having ordinary skill in the art would not be motivated to modify the Baumann machine in such a manner.⁶

Similarly, to modify the Baumann machine by placing the fan 27 of Lukens at the other end of the machine, i.e., near the fan 22a, the same problems would occur. The fan 27 is adapted to draw air from the interior of the machine while the fan 22a is adapted to draw air into the machine. Thus, the fans 27 and 22a would also work against one another, destroying the function of the fan 22a. One having ordinary skill in the art would not be motivated to modify Baumann in such a manner.

There is no motivation or suggestion found within these prior art references or any other prior art source that would lead one having ordinary skill in the art to modify the Baumann machine according to the teachings of Lukens, as proposed in the final action. However, as discussed above, even if one were so motivated, no combination of Baumann and Lukens would result in a machine as recited in claims 1 and 20.

⁵ *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984). If a proposed modification renders the prior art, as modified, unsatisfactory for its intended purpose, there is no motivation to combine the particular references.

⁶ Even if Baumann were modified in this manner, the enclosure 40 would still lack a perimeter exhaust opening for directing air over the exterior surface of the housing or end shield 18, as discussed above.

2. Final Action Relies upon Improper Motivation or Suggestion

The final action sets forth a purported motivation or suggestion to combine the teachings of Baumann and Lukens. This proffered motivation or suggestion is improper for at least two reasons. First, it is based on an erroneous comparison between structures in the references and the claimed "exterior surface of the case" recited in claims 1 and 20. Second, it is merely a general motivation that has little or nothing to do with the particular reference teachings.

As to the first reason, page 2 of the final action equates the stator frame 20 in Baumann to the claimed "exterior surface of the case." Clearly, as shown in Fig. 1, the stator frame 20 is a fixed portion of the stator 12, which in turn is one of the machine components. The stator frame 20 is not part of the machine's exterior housing. Instead, the housing in Baumann is defined by the end shields 18' and 18. The stator 12, including the frame 20, is housed with the interior working chambers 19 and 19' of the shields. The stator frame 20 does not define an interior working chamber and does not define a case exterior surface as claimed. Instead, the frame 20 is attached directly to the stator 12 with no gap and does not define a working chamber through which air passes. Claims 1 and 20 recite that air is moved through the working chamber (defined interior to the case) and over the machine components. Clearly, the stator frame 20 does not equate to the recited case in claims 1 and 20.

Similarly, page 3 of the final action identifies the exterior case of the Lukens machine as reference number 7. To the contrary, the reference number 7 also defines the stator plate or frame, and not an exterior case. The Lukens machine includes an exterior case or wrapper 17 that defines a working chamber in which the stator and stator frame 7 are housed as one of the machine components. Again, it is the wrapper 17 and not the frame 7 that defines a working chamber and an exterior surface as claimed. These erroneous designations lead, at least in part, have been relied upon in the final action as a basis for the motivation or suggestion to combine the reference teachings.

It is clear from the claim language in both claims 1 and 20 that air is ventilated from the device and directed over an exterior surface of a case or housing of the entire device as well as being directed over surfaces of one of the machine components housed within the

case. Claims 1 and 20 distinguish between the interior working parts (identified as 24 in Fig. 1) and an exterior surface of the outer case (identified as 30 in Fig. 1) of the device. As with most any machine of this type, air is directed by an internal fan internally between the exterior case and the internal working parts and, thus, can be characterized as air flow "over" such devices as claimed. This is clearly distinguishable from air flow over the exterior surface of the case and any of these devices.

Page 3 of the final action states that the motivation to combine reference teachings is that "[i]t would have been obvious to one having ordinary skill in the art at the time of the invention to design the machine as taught by **Baumann et al.** And (*sic*) to provide axially extending air passages allowing the second fan for both, assisting the first fan in creating an internal flow through the working chamber and *creating an external flow through the exhaust openings and over the exterior surface of the case as taught by Lukens* for the purpose of improving the efficiency of the cooling system for a compact, synchronous or drip-proof dynamoelectric machine (emphasis added)." The action has relied on an incorrect interpretation of the structures and arrangements in comparison to the claims.

To illustrate, the stated motivation or suggestion relies heavily on the erroneous assumption that the "exterior surface of the case" in Lukens is the stator plate 7, and not the wrapper 17. It is clear that neither Baumann nor Lukens discloses moving air *over an exterior surface of an outer case or housing* of the respective machines in any manner, much less in the manner as claimed. The motivation to combine reference teachings relied upon in the final action, thus, does not come from the prior art teachings, but instead has come from the applicant's disclosure.⁷ The alleged motivation to combine reference teachings is fatally flawed for at least this reason.

As to the second reason, every machine of this type employs one or more fans to cool the machine in order to improve machine efficiency. It is admittedly a common goal to "improve the cooling system efficiency" of such machines in some manner. This alone is

⁷ Though not addressed herein, it is likely that the final action has also improperly relied upon hindsight in combining the reference teachings. The stated motivation merely recites the applicant's own claim language and a general motivation, neither of which is taken from either of the references. This tactic suggests that hindsight has been relied upon.

not a suggestion or motivation to combine the specific teachings of Baumann and Lukens.⁸ The motivation to combine the teachings of *two particular references* must have at least something to do with the specific cooling structures and arrangements disclosed in the particular references.

The motivation proffered in the final action, "for the purpose of improving the efficiency of the cooling system for a compact, synchronous or drip-proof dynamoelectric machine," does not account for the specific machine arrangements in either Lukens or Baumann. This purported motivation, if acceptable here, could be raised in virtually every case relating to this type of machine. Such a position would effectively eviscerate the requirement to find a suggestion or motivation *within the prior art teachings*, which of course, would be improper.⁹ The final action has not identified a satisfactory suggestion or motivation as to why one having ordinary skill in the art would be moved to *modify the specific machine of Baumann according to the specific teachings of Lukens*. The proffered motivation in the final action is fatally flawed for this additional reason.

The motivation or suggestion put forth in the final action is improper as discussed above. As a result, the final action has failed to raise a *prima facie* case of obviousness for at least this additional reason.

C. Claim Rejection Must Be Withdrawn

In view of the foregoing remarks, the final action has not raised a proper *prima facie* case of obviousness. The rejection of claims 1-20 under 35 U.S.C. §103 must be withdrawn. Claims 1-20 are in condition for allowance.

⁸ *In re Deuel*, 51 F.3d 1552, 34 USPQ2d 1210 (Fed. Cir. 1995), holding that a mere general motivation that relates to a particular art (gene technology) does not necessarily make obvious a specifically defined invention that resulted from pursuing the general motivation. A structurally undefined advance, here an improved fan arrangement and cooling air flow pattern, would not likely have been contemplated by one having ordinary skill in the art merely from considering the general motivation to "improve cooling efficiency" of the machine.

⁹ *Id.*

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VIII. CLAIMS INVOLVED IN THE APPEAL

A copy of the claims involved in the present appeal is attached hereto as Appendix A. As indicated above, the claims in Appendix A include all of the amendments filed by Applicant on April 7, 2003.

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Respectfully submitted,

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APPENDIX A

Claims Involved in the Appeal of Application Serial No. 09/691,520

1. A rotary machine comprising:
 - a case having an exterior surface exposed to a supply of ambient air, a drive end, an opposite end, and an interior working chamber;
 - a rotary shaft supported for rotation within the working chamber between the drive end and the opposite end;
 - at least one machine component supported on the rotary shaft for rotation in the working chamber;
 - at least one air inlet and at least one air outlet formed in the case;
 - a first fan supported for rotation on the rotary shaft within the working chamber and arranged to create an internal air flow through the working chamber from the at least one air inlet over the at least one machine component to the at least one air outlet;
 - a cowl received over the case opposite end and defining a plenum between an interior surface of the cowl and the opposite end of the case, the cowl defining an annular exhaust opening around a perimeter of the cowl; and
 - a second fan positioned within the plenum and mounted for rotation on a portion of the rotary shaft, the second fan being arranged both for assisting the first fan in creating the internal air flow through the working chamber and for creating an external air flow through the exhaust opening and over the exterior surface.
2. A rotary machine according to claim 1, wherein the second fan is supported for rotation on a portion of the rotary shaft extending from the case.
3. A rotary machine according to claim 1, further comprising:

a gap between an inner surface of the case and the at least one machine component permitting the internal air flow to pass through the working chamber between the case and the machine component.

4. A rotary machine according to claim 1, further comprising:

a plurality of longitudinal openings provided in portions of the at least one machine component permitting the internal air flow to pass through the at least one machine component during operation.

5. A rotary machine according to claim 1, wherein the at least one machine component includes a rotor section and a stator section of an electric motor with the rotor section concentrically carried on the rotary shaft for rotation relative to the stator section.

6. A rotary machine according to claim 1, wherein the cowl further includes at least one air inlet port formed concentric with the rotary shaft for admitting a supply of the ambient air into the plenum, a portion of which is mixed with the external air flow and directed over the exterior surface of the case.

7. A rotary machine according to claim 1, wherein the at least one air inlet is provided through the drive end of the case.

8. A rotary machine according to claim 1, wherein the at least one air inlet is provided through the case near the drive end.

9. A rotary machine according to claim 1, wherein the at least one air outlet is provided through the opposite end of the case.

10. A rotary machine according to claim 1, wherein the at least one air outlet is provided through the case near the opposite end.

11. A rotary machine according to claim 1, further comprising at least one housing extension defining a cavity in communication with the interior working chamber of the case, the cavity having at least one air inlet port and at least one air outlet port defining a longitudinal air flow path through the cavity.

12. A rotary machine according to claim 1, wherein the first fan is arranged for creating the internal air flow from the drive end toward the opposite end of the case and wherein the second fan directs the internal air flow exiting the at least one air outlet toward the exhaust opening of the plenum to create at least a portion of the external air flow.

13. A rotary machine according to claim 1, wherein the first fan is arranged for creating the internal air flow from the opposite end toward the drive end of the case.

14. A rotary machine according to claim 1, further comprising:
a baffle plate positioned between the at least one air inlet and the first fan, the baffle plate having one or more air openings formed therethrough and being arranged to assist in distributing the internal air flow over the interior working chamber near the at least one air inlet.

15. A rotary machine according to claim 1, further comprising:
an inlet chamber in communication with the at least one air inlet, the inlet chamber positioned near the first fan; and
a plurality of air passages provided in a wall of the inlet chamber facing the first fan arranged to assist in distributing the internal air flow over the interior working chamber near the first fan.

16. A rotary machine according to claim 1, further comprising:

at least one supplemental air outlet positioned upstream of the at least one air outlet for permitting a portion of the internal air flow through the interior working chamber to exit the case prior to reaching the at least one air outlet.

17. A rotary machine according to claim 1, further comprising a plurality of air inlets.

18. A rotary machine according to claim 1, further comprising a plurality of air outlets.

19. A rotary machine according to claim 1, further comprising:

a baffle flange disposed around a circumference of an interior surface of the working chamber near the first fan.

20. A method of cooling a rotary machine having a case with an exterior surface exposed to a supply of ambient air, a rotary shaft supported within an interior working chamber of the case, and at least one machine component supported for rotation on the rotary shaft within the working chamber, the method comprising the steps of:

providing at least one air inlet and at least one air outlet in fluid communication with the working chamber;

mounting a first fan for rotation on the rotary shaft within the working chamber;

mounting a second fan for rotation on the rotary shaft within a plenum on one end of the machine and exterior to the case;

arranging the first fan to create an internal air flow through the working chamber of the case from the at least one air inlet and over the at least one machine component to the at least one air outlet; and

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arranging the second fan both to create an external air flow from the plenum back over the exterior surface of the case and to assist the first fan in creating the internal air flow through the working chamber.